

CLAIMS:

1. A watering system for a poultry house, the watering system comprising:
 - a watering line, said watering line comprising a plurality of pipe segments connected together by a coupling mechanism; said pipe segments each including at least one drinker opening; said coupling mechanism being at a predetermined location relative to said drinker opening; said coupling mechanism rotationally fixing said pipe segments relative to each other such that the drinker openings of the pipes segments in the watering line are aligned and fixed; said pipe segments including a projection extending outwardly from an outer surface of said pipe segments;
 - a stabilizing bar, said stabilizing bar including an axially extending shoulder; and
 - a plurality of clips which suspend said watering line from said stabilizing bar; said clips each including a pair of arms extending from said pipe receiving section; said arms defining a groove sized and shaped to engage said stabilizing bar shoulders; said clips including a pipe receiving section sized to receive said pipe segment and a boot on said pipe receiving section; said boot defining a pocket; said boot being positioned on said clip pipe receiving section to engage said pipe segment projection to positionally fix said pipe segment relative to said clip;
- whereby, said coupling mechanism keys and rotationally fixes said pipe segments of said water line on to another to ensure alignment of said drinker openings and to prevent rotational movement of said pipe segments relative to each other; and
- whereby said clip keys said pipe segments to said stabilizing bar to prevent rotational movement of said pipe segments relative to said stabilizing bar.

2. The watering system of claim 1 wherein said pipe segment projection includes an outer surface and a depression formed in said outer surface; said clip boot comprising radiused surface which engages said pipe segment depression.

3. The watering system of claim 2 wherein said boot includes a back surface, front surface, side surfaces, and bottom surface defining a pocket; said boot front surface having a top edge defining said radiused surface; said projection including a portion which is received in said clip boot pocket.

4. The watering system of claim 1 wherein said coupling mechanism comprises a keying element which engages ends of said pipe segments to rotationally align and rotationally fix adjacent pipe segments relative to each other.

5. The watering system of claim 4 wherein said keying element comprises the end formations on said pipe segments; said end formations comprising at least one arcuate segment extending axially from the ends of said pipe segments; said end formations of adjacent pipe segment intermeshing to rotationally align and rotational fix adjacent pipe segments relative to each other.

6. The watering system of claim 4 wherein said keying element is separate from said pipe segments; said pipe segments comprising an opening at the ends of said pipe segments to receive the keying element.

7. The watering system of claim 6 wherein said keying element is a pin, and said opening comprises a bore extending inwardly from an end of said pipe segment.

8. The watering system of claim 7 wherein said pipe segment includes a rib extending axially from an end of said pipe segment, said bore being formed in said rib.

9. The watering system of claim 8 wherein said rib is formed on an inner surface of said pipe segment.

10. The watering system of claim 6 wherein said keying element is a plate; said plate comprising opposed edges, at least one of said plate opposed edges including a projection; said pipe segment opening comprising a slot extending inwardly from an end of said pipe segment, said slot being sized to receive the plate projection; said plate projection having a length such that it extends from the slot of one pipe segment into the slot of an adjacent pipe segment.

11. The watering system of claim 4 including a coupler to form a water tight seal between adjacent pipe segments; said keying element extending from a surface of said coupler.

12. The watering system of claim 11 wherein said keying element comprises a rod, said water pipe segments including a bore at the ends therefor; said bore being positioned to be aligned with said coupler cylinder.

13. The watering system of claim 12, wherein said rod is hollow; said coupling system further including a pin sized to be received in and extend between said coupler hollow rod and said pipe segment bore.

14. The watering system of claim 12 wherein said rod defines a pin sized to be received in said pipe segment bore.

15. The watering system of claim 11 wherein said keying element comprises a rib extending axially along a surface of said coupler; said opening in said pipe segment comprising a slot extending inwardly from an end of said pipe segment.

16. The watering system of claim 15 wherein said keying element further includes an axially extending cap on said rib, said cap having a bottom surface which extends outwardly from opposite sides of said rib, whereby said key has a generally T-shaped configuration in end elevation, said key rib having a height slightly greater than the annular width of said pipe segment; whereby, said key cap will sandwich said pipe segment between said key cap and said coupler inner surface.

17. The watering system of claim 16 wherein said cap has a curvature corresponding to the curvature of said pipe segment and said coupler inner surface.

18. The watering system of claim 15 wherein said coupler includes a stop on an inner surface of said coupler body; said stop being substantially perpendicular to said key; said stop being positioned in said coupler body to be positioned approximately midway along the length of said key.

19. The watering system of claim 18 wherein said stop comprises a circumferential rib.

20. The watering system of claim 11 including a key position indicator on an outer surface of said coupler body; said key position indicator having an angular position on said body corresponding to the angular position of said key within said body.

21. A tube coupling mechanism for rotationally aligning and positively rotationally fixing two adjacent pipe segments relative to each other; said coupling mechanism comprising a keying element which engages ends of said pipe segments to rotationally align and rotationally fix adjacent pipe segments relative to each other.

22. The tube coupling mechanism of claim 21 wherein said keying element comprises end formations extending axially from the ends of said pipe segments; said

end formations of adjacent pipe segment intermeshing to rotationally align and rotational fix adjacent pipe segments relative to each other.

23. The tube coupling mechanism of claim 22 wherein said end formations comprise at least one curved segment.

24. The tube coupling mechanism of claim 23 wherein said curved segments of adjacent pipe sections mesh together to form a circle.

25. The tube coupling mechanism of claim 21 wherein said keying element is separate from said pipe segments; said pipe segments comprising an opening at the ends of said pipe segments to receive the keying element.

26. The tube coupling mechanism of claim 25 wherein said keying element is a pin, and said opening comprising a bore extending inwardly from an end of said pipe segment.

27. The tube coupling mechanism of claim 26 wherein said pipe segment includes a rib extending axially from an end of said pipe segment, said bore being formed in said rib.

28. The tube coupling mechanism of claim 27 wherein said rib is formed on an inner surface of said pipe segment.

29. The tube coupling mechanism of claim 25 wherein said keying element is a plate; said plate comprising opposed edges, at least one of said plate opposed edges including a projection; said pipe segment opening comprising a slot extending inwardly from an end of said pipe segment, said slot being sized to receive the plate projection; said plate projection having a length such that it extends from the slot of one pipe segment into the slot of an adjacent pipe segment.

30. The tube coupling mechanism of claim 21 wherein said keying element extends from a surface of said coupler.

31. The watering system of claim 30 wherein said keying element comprises a rod, said water pipe segments including a bore at the ends therefor; said bore being positioned to be aligned with said coupler cylinder.

32. The watering system of claim 31, wherein said rod is hollow; said coupling system further including a pin sized to be received in and extend between said coupler hollow rod and said pipe segment bore.

33. The watering system of claim 31 wherein said rod defines a pin sized to be received in said pipe segment bore.

34. The tube coupling mechanism of claim 30 wherein said keying element comprises a rib extending axially along a surface of said coupler; said opening in said pipe segment comprising a slot extending inwardly from an end of said pipe segment.

35. The tube coupling mechanism of claim 34 wherein said keying element further includes an axially extending cap on said rib, said cap having a bottom surface which extends outwardly from opposite sides of said rib, whereby said key has a generally T-shaped configuration in end elevation, said key rib having a height slightly greater than the annular width of said pipe segment; whereby, said key cap will sandwich said pipe segment between said key cap and said coupler inner surface.

36. The tube coupling mechanism of claim 35 wherein said cap has a curvature corresponding to the curvature of said pipe segment and said coupler inner surface.

37. The tube coupling mechanism of claim 34 wherein said coupler includes a stop on an inner surface of said coupler body; said stop being substantially perpendicular to said key; said stop being positioned in said coupler body to be positioned approximately midway along the length of said key.

38. The tube coupling mechanism of claim 22 wherein said stop comprises a circumferential rib.

39. The tube coupling mechanism of claim 30 including a key position indicator on an outer surface of said coupler body; said key position indicator having an angular position on said body corresponding to the angular position of said key within said body.

40. The coupling mechanism of claim 30 wherein said pipe segment includes at least one rib; and said coupler includes at least one finger; one of said at least one rib and said at least one finger defining a groove which receives the other of said at least one rib and said at least one finger; said at least one pipe segment rib and said at least one coupler finger engaging each other to rotationally fix adjacent pipe segments relative to each other.

41. A coupler for rotationally aligning and rotationally fixing two adjacent pipe segments relative to each other; said coupler comprising a hollow tube defined by a wall having an inner and outer surface; said tube being sized and shaped to telescopically mate with said pipe segments; said tube a key sized and shaped to engage said tubes; said key comprising at least one axially extending leg extending from said surface.

42. The coupler of claim 41 wherein said key comprises two axially extending legs, said legs being spaced apart from each other.

43. The coupler of claim 41 wherein said axially extending is spaced from the surface of said coupler.

44. The coupler of claim 41 wherein said key further includes an axially extending cap on said leg, said cap having a bottom surface which extends outwardly from opposite sides of said leg, whereby said key has a generally T-shaped configuration in end elevation.

45. The coupler of claim 42 wherein said key cap has a curvature corresponding to the curvature of said coupler inner surface.

46. The coupler of claim 41 wherein said coupler includes a stop on an inner surface of said coupler body; said stop being substantially perpendicular to said key; said stop being positioned in said coupler body to be positioned approximately midway along the length of said key.

47. The coupler of claim 46 wherein said stop comprises a circumferential rib, said key extending across said rib.

48. The coupler of claim 41 including a key position indicator on an outer surface of said coupler body; said key position indicator having an angular position on said body corresponding to the angular position of said key within said body.

49. The coupler of claim 41 wherein said body includes a central section and opposed end sections, said central section defining a first diameter and said outer sections defining a second diameter greater than said first diameter; there being a shoulder formed between the central and end sections; an end ring received in each of said body end sections; said end ring having an inner diameter substantially equal to the inner diameter of said body central section; said end ring having an axial length less

than the axial length of said end sections, whereby, a gap is formed between an inner end of said end ring and said shoulder to receive a seal.

50. The coupler of claim 49 wherein one of said body end sections and said end rings include a groove and the other of said body end sections and said end rings include a projection; said projection being received in said groove to snap fit said end ring into said body end section.

51. A clip for connecting a water line to a stabilizing bar; said clip including:
a ring section sized to receive said water line;
a pair of arms extending from said ring section, said arms having inner and outer surfaces, there being a groove on one of said surfaces of each of said arms; and
a boot defining a pocket.

52. The clip of claim 51 wherein said clip boot comprises a radiused edge.

53. The clip of claim 52 wherein said boot includes a back surface, front surface, side surfaces, and bottom surface defining said pocket; said boot front surface having a top edge defining said radiused edge.

54. The clip of claim 51 wherein said boot is extends radially outwardly of said ring.

55. The clip of claim 51 wherein said boot positioned on said ring approximately 180° from said arms.

56. The clip of claim 51 wherein said arms are flexible.

57. the clip of claim 51 wherein said arms each include a barb having a generally flat lower surface and a rib spaced from said barb lower surface; said barb lower surface and said rib defining said groove.

58. A method of assembling a water line comprising a plurality of pipe segments joined by couplers; said coupler having an inner surface, and an axially extending key on said inner surface; the method comprising;

(a) supplying a pipe segment having at least one axially extending notch at an end of the pipe;

(b) aligning said coupler key with said pipe segment notch; and

(c) slidably receiving said pipe segment in said coupler such that said coupler key is received in said pipe segment notch; and

repeating steps (a)-(c) until a water line of a desired length is obtained.

59. A method of assembling an animal drinking system; the animal drinking system comprising a watering line, a stabilizing bar, and a plurality of clips which suspend said watering line from said stabilizing bar; said method comprising:

supplying a plurality of pipe segments;

rotationally aligning adjacent pipe segments together and positively fixing the rotational position of adjacent pipe segments relative to each other to form a watering line of a desired length;

connecting clip to said pipe segments; said clips positively engaging said pipe segments to positively fix the rotational position of said pipe segments relative to said clips; and

connecting said clips to said stabilizing bar, whereby, said pipe segments are rotationally fixed relative to said stabilizing bar.

60. The method of claim 59 wherein the pipe segments include a projection extending outwardly from an outer surface of said pipe segments; and said clips each

including a ring section sized to receive said pipe segment and a boot defining a pocket; said step of positively fixing the position of said pipe segments relative to said clip comprising said clip pocket engaging said pipe segment projection.

61. The method of claim 59 wherein said stabilizing bar includes a pair of shoulders and said clip includes a ring section sized to receive said pipe segments and a pair of arms extending from said ring section; said arms each defining a groove; said step of connecting said clip to said stabilizing bar comprising said groove engaging said stabilizing bar shoulder.